



CHAPTER 1

Supporting healthier diets for poor people

Poor people don't just need food – they need nutritious food. Widespread challenges limit the consumption of nutrient-dense foods by poor people in both rural and urban areas. Closing the critical diet gaps is one of today's most urgent priorities.

How can food systems be transformed to make healthier diets more available, accessible and affordable to the world's poor? How can such transformations support diversified, desirable and durable consumer choices? And how can transformed food systems guarantee nutrition and health while promoting a safe, stable and inclusive food environment that is not only equitable but sustainable?

This chapter starts by analysing the nutrition constraints of current food system transitions for poor people. It then identifies the main changes needed to induce a healthier food supply and to tailor consumer demand towards more nutrient-dense foods – using both market-based incentives and public investments to steer food choices, all while respecting planetary boundaries. The chapter develops four key messages:

1. **In both rural and urban areas, poor people bear a triple burden of malnutrition – undernourishment, micronutrient deficiencies and overweight prevalence – because current food system transitions have not made nutritious diets sufficiently available, accessible or affordable to them.** Economic, demographic and policy trends are reinforcing this triple burden disproportionately on poor people, and the effects of the COVID-19 pandemic on food systems worldwide heighten these challenges.
2. **To reduce critical nutrition gaps, a food system transformation needs to have four dimensions: driving consumer choices towards more diversified diets, empowering women and other disadvantaged groups, strengthening rural-urban linkages and improving physical access to varied types of food markets and food outlets.** For poor people to consume more nutrient-dense foods, they must be able to make healthier choices – choices based on better information and greater access to affordably nutritious diets. Empowering poor people, including women in food systems, to earn better incomes and taking control over consumption can yield significant benefits in health and nutrition outcomes.

3. **Because food systems respond to consumer demand, demand-led incentives must be the main levers for food system transformation, and shaping these incentives must be a central focus of policymaking.** Key areas to emphasize are targeted social safety nets and cash transfers to poor people; support to women's empowerment and gender equality to level access to resources and widen choices; promotion of better food preparation practices; and behavioural change communication. Other incentives with potential benefits include food quality labelling and marketing, and promoting ICT-based market information systems and product imaging.
4. **Public regulation and investments are imperative to support a more inclusive food environment.** To elicit balanced and diverse food demand, and nudge consumers towards healthier and more sustainable dietary choices, food-system-related laws and public investments must steer the social practices and cultural norms of diverse categories of consumers. Specific actions can involve legislation and capacity-building; fiscal policy instruments such as tariffs, taxes and subsidies to modify food prices and influence consumer choice; food-based dietary guidelines; co-investment and institutional procurement; and behavioural nudging.

How must food supplies improve to close critical nutrition gaps, especially for poor people?

Food systems are under increasing pressure to deliver healthy diets to poor people. Inadequate diets are a major cause of malnutrition, morbidity and mortality worldwide. Despite some progress in reducing undernourishment (stunting and wasting), the “hidden hunger” of micronutrient deficiencies persists. And the prevalence of overweight, obesity and diet-related non-communicable diseases is rising globally – most rapidly in low-income countries (Development Initiatives, 2020). Many countries face a “triple burden” from multiple forms of malnutrition (Popkin, Corvalan and Grummer-Strawn, 2020). The resulting burdens exceed those attributed to many other global health challenges (GBD 2017 Diet Collaborators, 2019).

What makes a diet healthy? Generally, healthy diets are diversified and proportionally divided among various food groups. They include adequate amounts of fruits and vegetables, whole grains, legumes and nuts. They also provide sufficient intake of starchy staples and animal-sourced foods (ASF): preferably milk, eggs, poultry and fish. In contrast, today's food systems are traditionally based mainly on staple foods that are eaten routinely and that largely provide calories. Thus, while the world has more than 50,000 edible plants, just three of them – rice, maize and wheat – provide 60 per cent of food energy intake.

Healthy diets also avoid or limit the consumption of foods that pose a threat when eaten to excess. Such foods include free sugars (sugar-sweetened beverages), foods with certain amounts of total energy and certain types of fat (especially saturated and trans fats), salt (which, when consumed, should be iodized), red meat, processed meat and ultra-processed food (UPF) (Herforth et al., 2020; on processed and ultra-processed food, see CHAPTER 7). Part of the challenge today is that consumption of these foods is on the rise in low-income and middle-income countries undergoing a nutrition transition (**BOX 1.1**).

The COVID-19 pandemic has fast-tracked the need to transform food systems. Immediate challenges to stable food supply and demand have arisen as a result of border closures, local market lockdowns and income losses among own-account and migrant workers. Pandemic-mitigation measures have caused dramatic declines in domestic trade and self-employment, with devastating consequences for poverty and malnutrition (Béné et al., 2021). This shift from a health crisis to a global economic and local food crisis highlights the urgency of making the food system more broadly resilient to different sources of vulnerability – it must become more adaptive, responsive and future-proof.

Especially vulnerable to the risk of nutritionally inadequate diets are women, children and adolescents of poor households in rural and peri-urban areas. Inequalities in nutrition are related to differences in gender empowerment and strongly driven by socio-economic disparities determined by location, income, wealth, education and ethnicity. Further compounding these inequalities are conflict and other forms of fragility (Development Initiatives, 2020).

BOX 1.1 THE NUTRITION TRANSITION, CHANGING DIETS AND NEW DIETARY HEALTH RISKS

Diet changes result largely from trends elsewhere in the food system. Many countries are in a nutrition transition (Popkin, 1993) that consists of three processes:

1. An increase in incomes with a concomitant reduction in income share devoted to food purchases.
2. A shift in food preferences involving a shift towards more nutrient-dense, animal-based and processed products.
3. Increasing urbanization, so that more food is provided by modern retail outlets and out-of-home food services.

Source: Popkin, 1993.

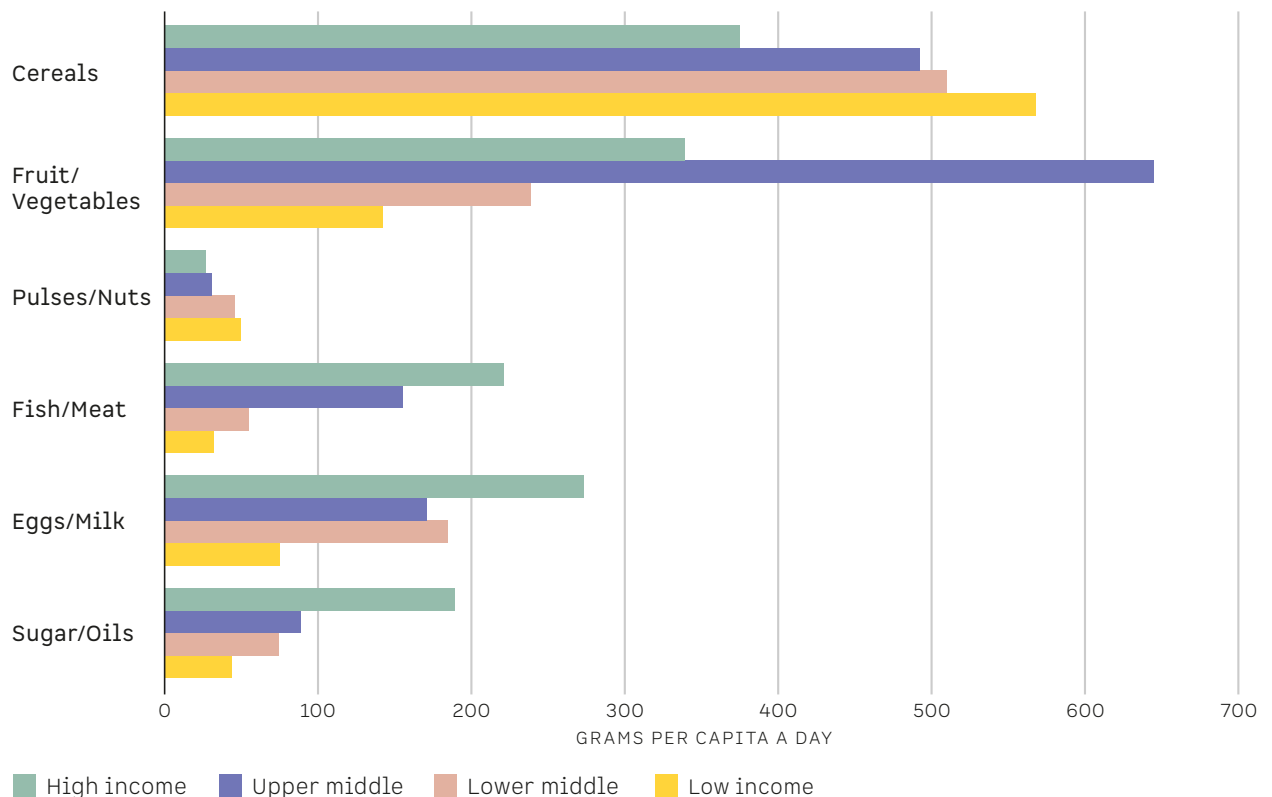
This transition generally drives a decline in undernutrition. Even so, as more food is consumed – especially ASF and UPF – new overweight and obesity risks appear. Critical nutrition gaps for particular socio-economic groups shift from underweight to micro-nutrition deficiencies and overweight. Dietary health risks change towards non-communicable diseases, which are far more expensive to treat.

Healthier diets must become more available and affordable

For many poor people, healthy diets are out of reach because of obstacles to both availability and affordability. A basic principle of healthy diets is diversity and proportionality among food groups. Countries with different income levels diverge in the availability of each food group (**FIGURE 1.1**). In low-income and lower-middle-income countries with more rural and traditional food systems, cereals and pulses predominate. Middle-income and high-income countries consume more fruits and vegetables. Upper-middle-income and high-income countries consume larger shares of fish, meat, sugar and oil.

Healthy diets are unaffordable for more than 3 billion people, most of them in Africa and Asia (FAO et al., 2020). Generally, the cost of a diet that meets food-based dietary guidelines is between US\$3.27 and US\$4.57 a day (Herforth et al., 2020). This is 60 per cent higher than the cost of meeting nutrient needs only – and almost five times the cost of meeting energy needs through basic starchy staples. Similarly, the EAT-Lancet reference diet is unaffordable for many people (FAO et al., 2020; Willett et al., 2019). For a basic plate of food (staple and legume stew), people would have to spend 9-50 per cent of their income on food in Asia, and 25-158 per cent in non-conflict-affected countries in Africa (WFP, 2017).

FIGURE 1.1 AVAILABLE QUANTITIES OF EDIBLE FOOD IN VARIOUS FOOD GROUPS, BY COUNTRY INCOME



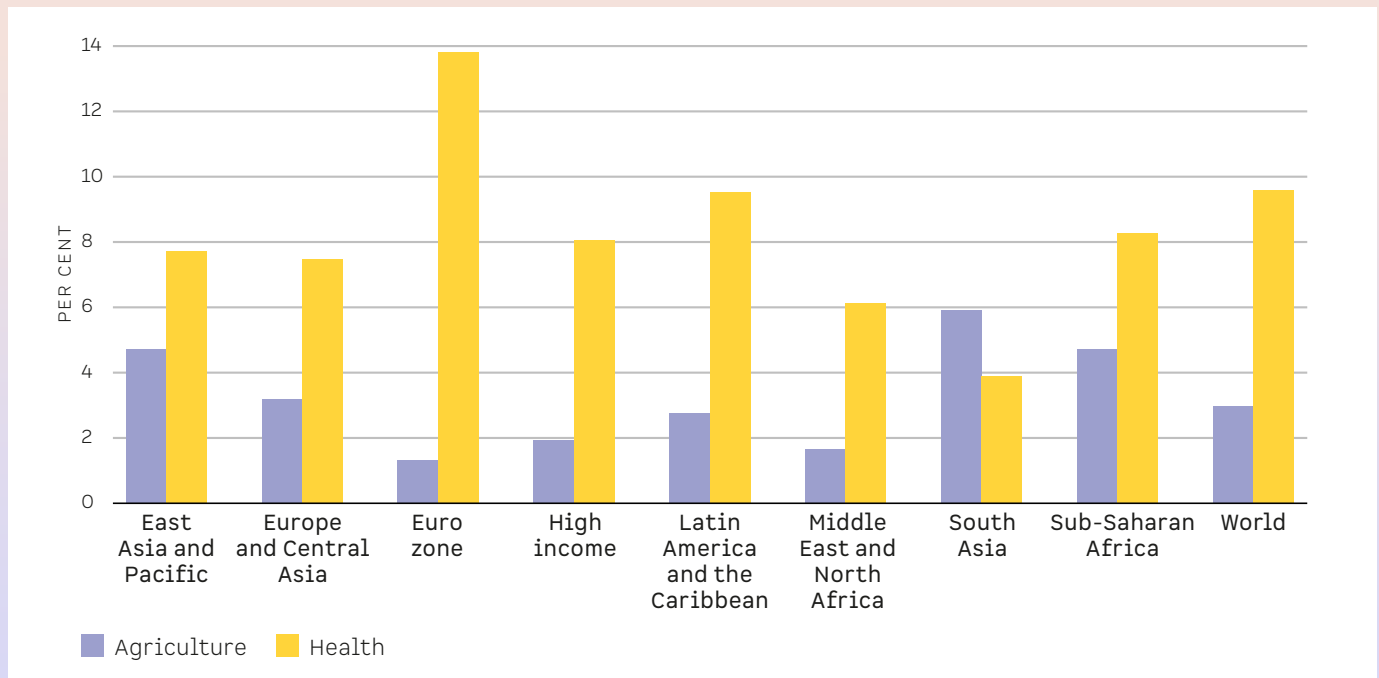
Source: Adapted from the *State of Food Security and Nutrition in the World 2020: Transforming Food Systems for Affordable Healthy Diets*. (FAO et al., 2020).

Healthy diets are generally more expensive than today's less healthy diets (Gurmu et al., 2019; Mendoza et al., 2017; Nykänen et al., 2018; Pondor et al., 2017; Verly et al., 2020). The high cost of a healthier diet mainly reflects high prices for nutrient-rich non-staples (fruits, vegetables, pulses) that drive poor people towards cheaper, starch-heavy diets. Healthier diets can be more affordable and more environmentally sustainable if people moderate their intake of ASF (Headey and Alderman, 2019). And the higher price of better diets can be offset, or even recovered many times over, by savings in health costs (**BOX 1.2**).

BOX 1.2 IMPROVING DIETS TO REDUCE HEALTH COSTS

Health costs represent 25-30 per cent of GDP in low- and middle-income countries. Except in South Asia, public expenditures for health care are two to four times higher than budgets for agriculture and rural development. Direct out-of-pocket payments by individuals to health-care providers represent 40-45 per cent of total health costs. Total health spending is growing faster than GDP, increasing

more rapidly in low- and middle-income countries (close to 6 per cent on average). External funding represents less than 1 per cent of global health expenditures. Investing in healthier diets can generate a large pay-off in reducing health costs for individuals – and for society at large: for every US\$1 invested in improved nutrition, US\$16 can be saved in health costs.



Source: IFPRI, 2019, Statistics on Public Expenditures for Economic Development (SPEED) database.

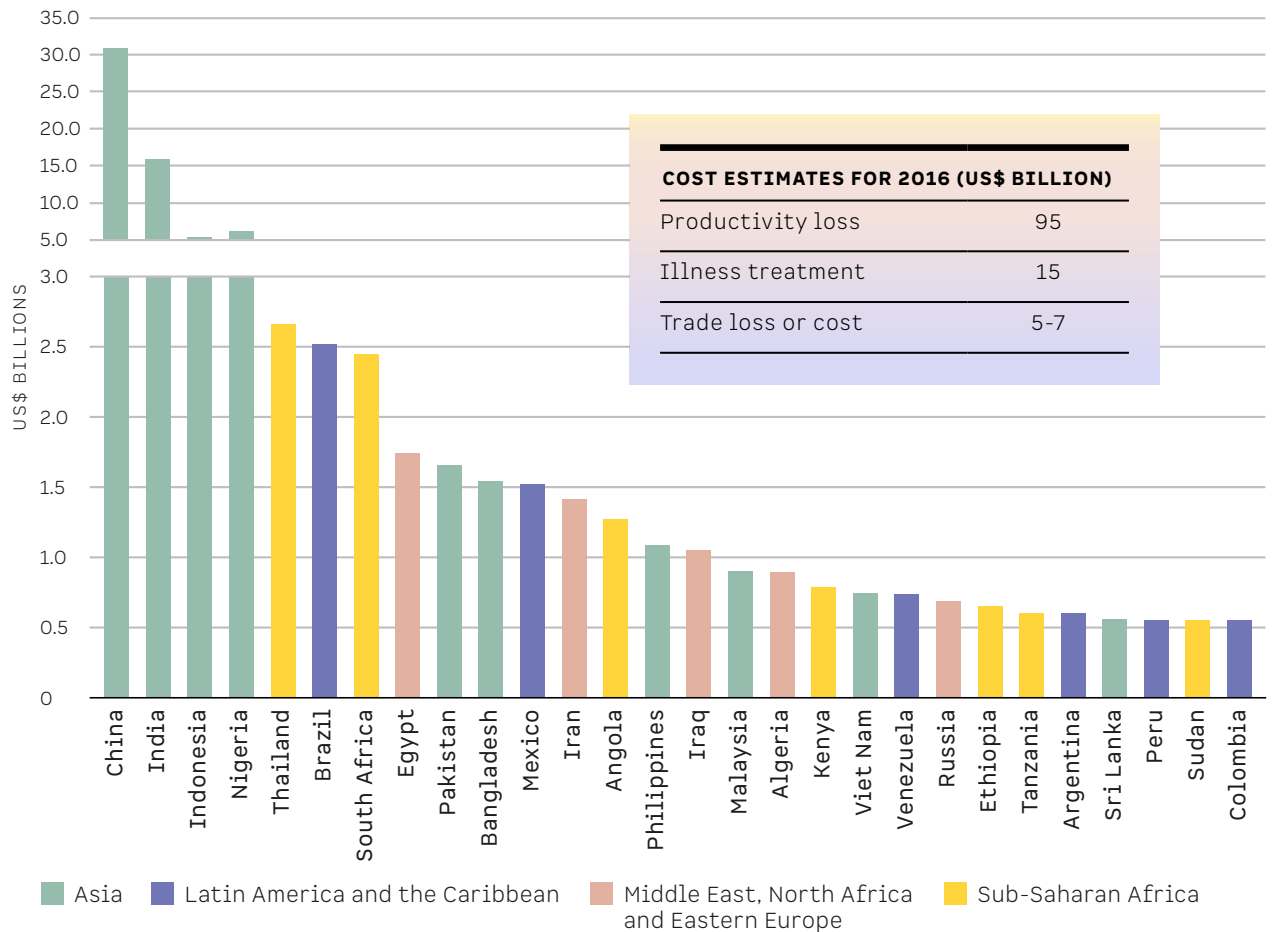
Foodborne diseases must be prevented

Foodborne diseases (FBDs) caused by biological food contamination are the largest threat to poor people's nutrition, food safety and health. Diets should contain minimal (zero) levels of pathogens, toxins and other agents that can cause diarrhoeal or other FBD (FAO and WHO, 2019). Food safety has direct implications for women's health and child nutrition. Pregnant and lactating women are especially vulnerable to FBDs because of their modulated immune system. Some FBDs cause foetal abnormalities, abortion and stillbirths, and chemical hazards can be transmitted to the newborn through breast milk (Grace, 2021). Children under 5 years of age and people in low- and middle-income countries are disproportionately affected by FBDs: they make up 9 per cent of the world population, suffer from 38 per cent of all foodborne illnesses, succumb to 30 per cent of foodborne deaths and bear 40 per cent of global foodborne disability-adjusted life-years (DALYs).³ The incidence of FBDs is highest in Africa and South-East Asia, along with the highest death rates and DALY loss (**FIGURE 1.2**). In developed countries, most FBDs result from consuming animal-sourced products and contaminated produce (fresh fruits and vegetables). The World Bank estimates that the economic cost of FBDs in low- and middle-income countries will rise to more than US\$100 billion a year (Jaffee et al., 2019).

Aflatoxins that attack maize, groundnuts and other staple crops produced in Africa are infecting food markets. They can cause liver cancer, are associated with stunting in children and are correlated with immunosuppression. In high doses, they can cause acute and fatal poisoning. Several practices can reduce aflatoxin contamination using biocontrol agents ("aflasafe"). These products are developed by international research agencies and need private investment to guarantee upscaling. Concerns are also increasing about health risks from chemical residues in food. A recent World Health Organization report found that 31 FBD agents (biological and chemical hazards) accounted for around 420,000 deaths worldwide, imposing a burden of around 33 million DALYs each year (Havelaar et al., 2015).

Food safety can be reinforced with better access to clean drinking water and sanitation, health-care services (especially prenatal and postnatal care) and integrated environmental conservation programmes.

³ Disability adjusted life years (DALYs) are the sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability.

FIGURE 1.2 ECONOMIC COST OF FOODBORNE DISEASE IN LOW- AND MIDDLE-INCOME COUNTRIES

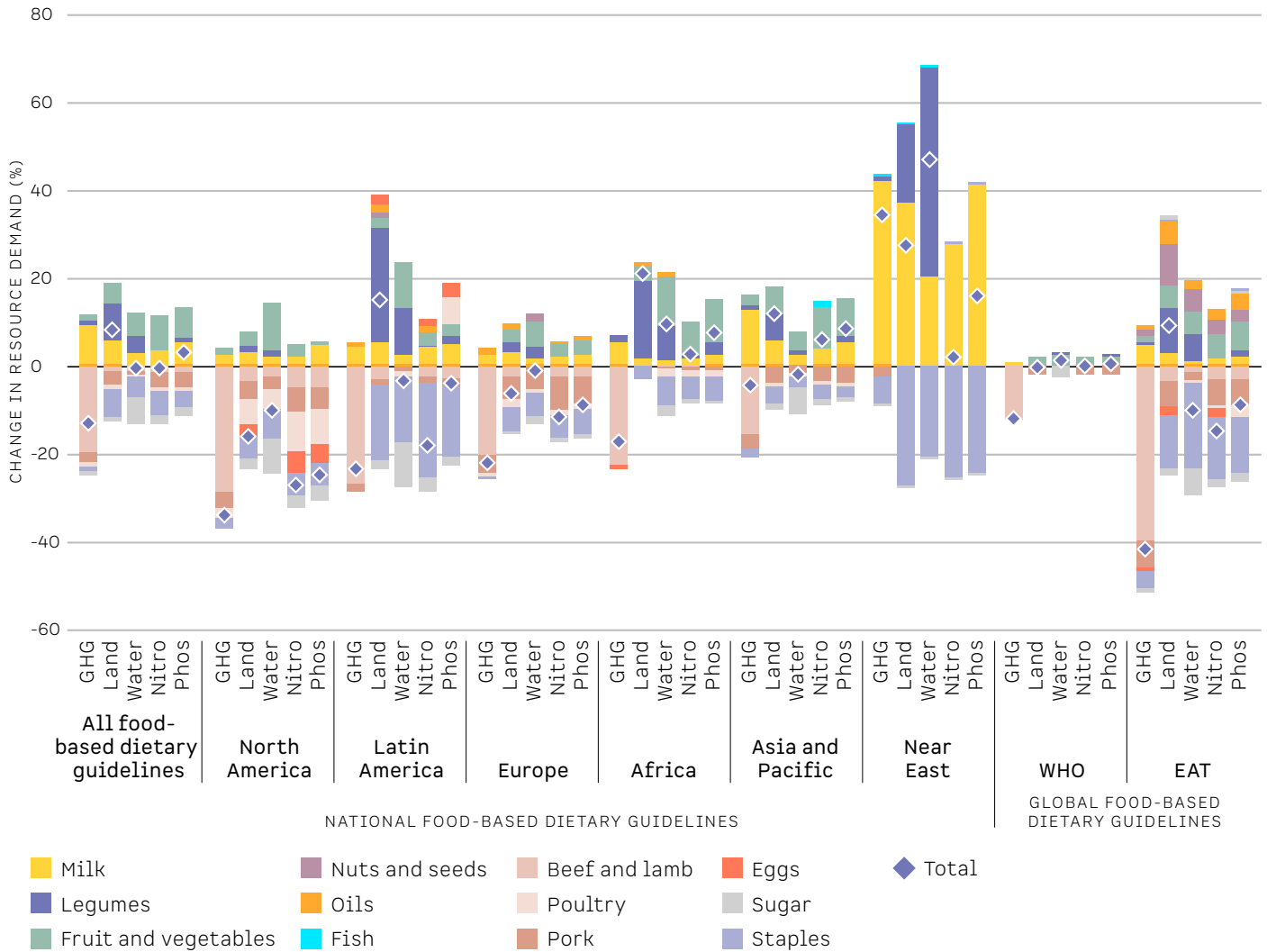
Note: Productivity loss = Foodborne Disease DALYS x Per Capita GNI.

Source: Grace, 2021, based on World Health Organization and World Development Indicators data and Jaffee et al., 2019.

The food systems of tomorrow must be sustainable and equitable

Not all healthy diets are sustainable, and not all sustainable diets are healthy – yet evidence suggests that synergies can be generated (Béné et al., 2019). Commonly used indicators to evaluate the environmental impact of diets or individual food items are greenhouse gas (GHG) emissions, water use, land use, acidification and eutrophication. Healthier diets (following food-based dietary guidelines) would add to GHG emissions from increased intake of animal-based foods (FIGURE 1.3). Optimal dietary patterns that align sustainability and health goals vary considerably between countries depending on how and where foods are produced (GLOPAN, 2020; Kim et al., 2020).

FIGURE 1.3 ENVIRONMENTAL EXTERNALITIES OF DIFFERENT DIETS



Note: Figures are changes in environmental resource demand for adopting national or global food-based dietary guidelines by food group and environmental domain.

Source: Springmann et al., 2020; World Health Organization, EAT-Lancet Commission on Healthy Diets from Sustainable Food Systems (EAT).

In general, sufficient evidence that sustainable diets can go hand in hand with healthy diets is emerging from studies that compare the environmental sustainability and healthiness of hypothetical diets (Kim et al., 2020; van Dooren et al., 2018), and those that evaluate the environmental impact of food-based guidelines or actual dietary intake (Behrens et al., 2017; van de Kamp et al., 2018). A recent modelling study, with data from 85 countries, concluded that diets based on national food-based dietary guidelines could be environmentally sustainable and also healthier (**BOX 1.3**) (Springmann et al., 2020).

BOX 1.3 MANAGING ERITREA'S FISHERIES

With a long coastal border on the Red Sea, Eritrea's fishing market has potential for sustainable growth in an environmentally friendly fashion. This would result in improved livelihoods for fishers and their families, as well as more nutrient-dense diets.

The Fisheries Resources Management Programme began operations in 2016, with both societal and environmental objectives. It aims to increase fish production and income generation for dietary improvements, thus bringing the nutrition and health benefits of fish to local diets, while also preventing overfishing and ensuring environmental integrity. Activities include developing and disseminating fishing equipment and investing in climate-smart products, such as solar fish driers,

Source: IFAD project completion reports and impact assessments.

and improved access to water sources. Training ensures safe fishing operations. Planting mangroves provides more environmentally friendly habitats for fish.

Under the programme, 330 government-constructed reservoirs have increased inland fish production. In addition, intensive watershed management – coupled with the continued planting of mangroves to sequester greenhouse gases – is enhancing climate resilience. An estimated 17,500 rural households will benefit once the programme is concluded, including both inland and coastal populations in six regions. The project has set 30 per cent inclusion targets for both youth and women.

Equity in food systems can be improved only if structural imbalances in the access, availability and price of healthy diets are addressed, and opportunities for reducing nutrition inequities are recognized (Development Initiatives, 2020). Rural smallholders and workers, women and adolescents, and indigenous people generally face larger and more structural nutrition deficits that are linked to their absence of voice and bargaining power. Many policies and programmes focusing on food system transformation tend to overlook the informal trade and small-scale food services that cater to these disadvantaged groups (CHAPTER 6). Equitable food systems thus need to look beyond access to markets and resources, and to devote explicit attention to their participation in governance regimes and information systems.

What structural changes are needed to make food systems more inclusive, more resilient and more supportive of healthy diets?

Food systems can improve rural and urban diets by making a diverse portfolio of nutrient-dense foods available at more affordable prices. To do this, they need to bridge rural-urban economic and nutritional divides through better market linkages. They must reinforce food system interactions to strengthen the resilience to external shocks such as COVID-19.

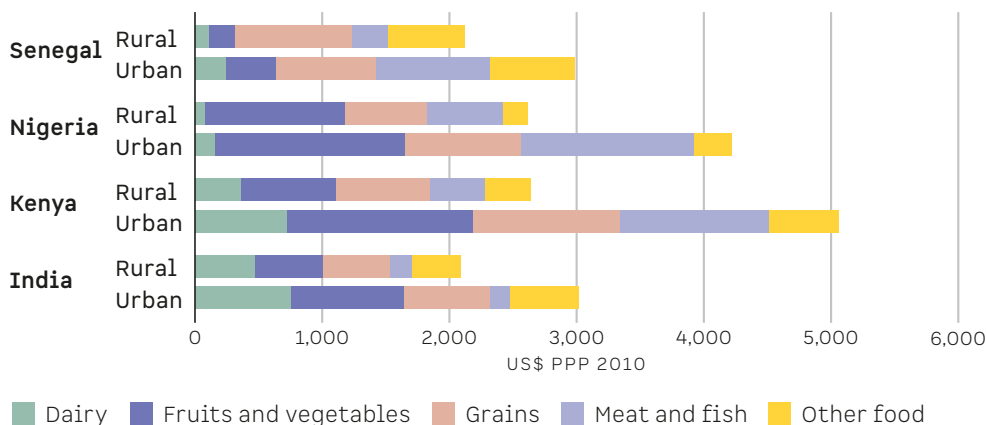
Rural areas lag behind urban areas in food spending, dietary diversity and food security

Urban and rural food expenditures differ in striking ways (**FIGURE 1.4**). Urban households have on average greater purchasing power, so they spend more on food: generally, total spending on food rises with income, even as the share of food spending gradually declines (Gandhi and Zhou, 2014). Urban households spend more on fruits and vegetables, and on ASF, for which demand rises from 5-10 per cent in low- and middle-income countries to more than 30 per cent in high-income countries (Dasi et al., 2019). Despite controversy around ASF, notably their climate impacts (see CHAPTER 2), they contribute to reducing iron-deficient anaemia and promote more optimal child development.

Rural households, by contrast, spend 20-30 per cent less on food, and their expenditures focus more on grains (de Bruin et al., 2021). In southern and eastern Africa, rural and urban middle-class diets become more diversified (Tschirley et al., 2015). In India, non-staples are becoming more important as shares of food expenditures in rural areas, where cereal expenditures fell from 41.1 per cent to 10.8 per cent (between 1971/72 and 2011/12), and in urban areas, where this share fell from 23.4 per cent to 6.6 per cent (Pingali et al., 2019).

FIGURE 1.4 PER CAPITA FOOD EXPENDITURES IN URBAN AND RURAL AREAS

PER CAPITA EXPENDITURE PER YEAR PPP\$ 2010



Source: de Bruin et al., 2021.

As net buyers of food, most poor people in both urban and rural areas can obtain required food items only by purchasing them. In rural areas, farm production can provide some basic livelihood revenues. More generally, however, the incomes and revenues of poor people depend mainly on income from non-farm employment and from regular or temporary off-farm employment. Income from off-farm activities tends to support upward mobility, accompanied by greater dietary diversity.

Although food in urban areas is often more expensive in absolute terms than food in rural areas, cities have greater food security – simply because the average urban consumer has more purchasing power (Headey et al., 2018; Stage, Stage and Mcgranahan, 2010; Tibesigwa and Visser, 2016). In West Africa, for example, 18 per cent of the rural population is undernourished, compared with 13 per cent of the urban population (van Wesenbeeck, 2018). In Ethiopia, diet diversity is higher and affordable to more people in urban areas than in rural areas (Gebru et al., 2018), and gendered differences in food security appear generally lower in urban areas (Sharma et al., 2020).

Rural-urban food market linkages generate jobs and increase stable access to food – but, as food value chains lengthen, extra attention is needed to ensure food safety

Food markets are critical for guaranteeing stable access to a wide variety of food, and they can help to stabilize food prices where there is seasonal variation in food supply. Food is increasingly purchased through different market channels, ranging from local barter trade and open markets to corner shops and supermarkets. This access to different market outlets favours stable access to affordable food (Sibhatu and Qaim, 2018). Food markets also offer large employment opportunities – especially for women – and are critical for controlling food safety and limiting adverse environmental effects.

Access to a diverse basket of fresh and healthy food mainly depends on adequate connectivity, both physically (roads, warehouses) and in access to market information through digital apps and mobile devices that support food trade. These devices also support the growth of out-of-home food consumption and home delivery of fast food. To ensure a variety of food choices, consumers need stable access to a diversified portfolio of formal and informal food outlets, thus avoiding the risk of large areas with “food deserts”.

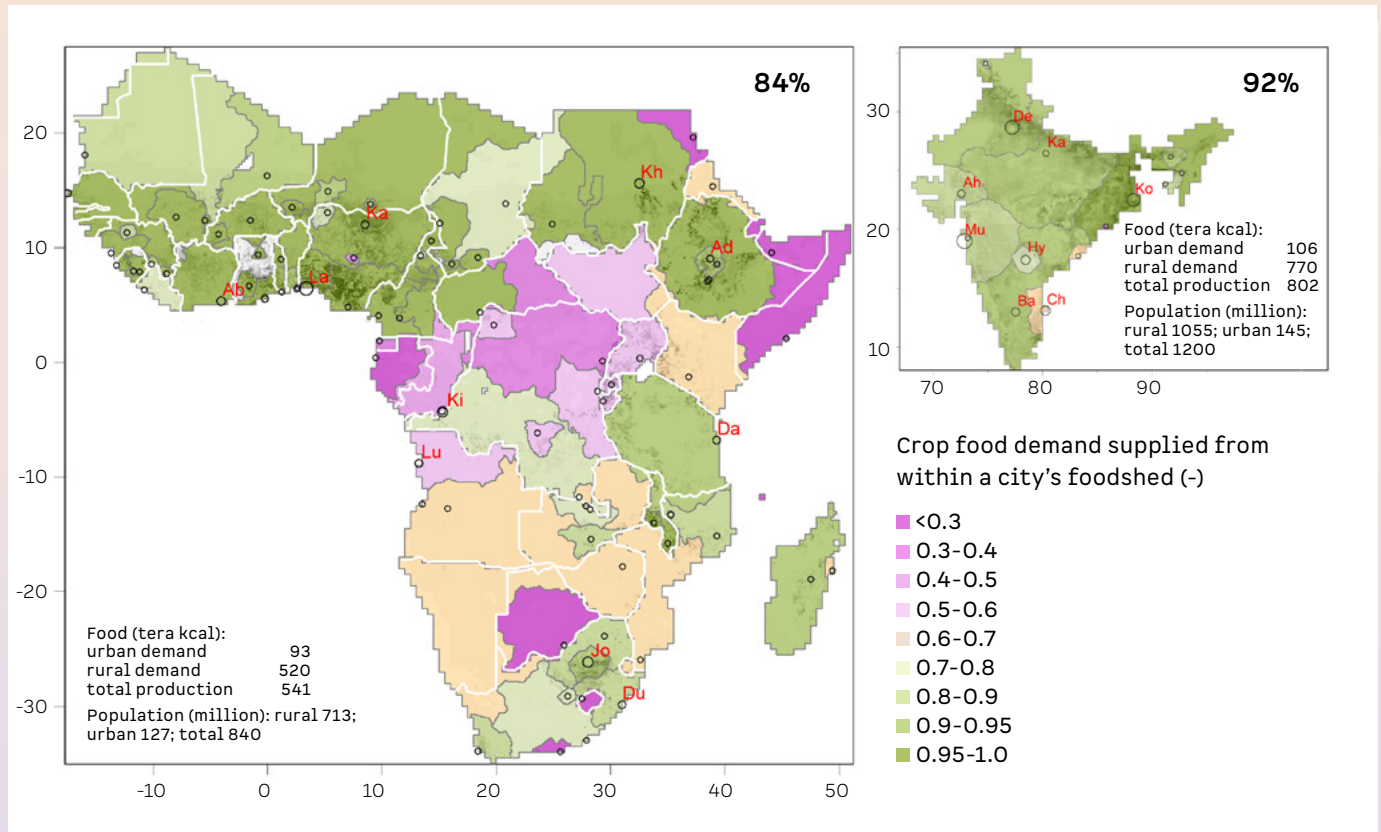
Foodsheds – the regional networks of production and consumption integrating food markets through shorter supply chains – depend on well-functioning rural-urban linkages. In sub-Saharan Africa and India, the great majority of urban food comes from rural-urban supply chains and is reliant on domestic traders and wholesalers (see CHAPTER 6). An exception is East Africa: with its dense population, it depends on imports (**BOX 1.4**).

BOX 1.4 COMPARING FOODSHEDS BASED ON URBAN-RURAL LINKAGES: INDIA AND SUB-SAHARAN AFRICA

Foodsheds – which can differ greatly in size – are vital for reducing the dependence of urban consumers

on food imports. Today, contrasting regional foodsheds appear in India and sub-Saharan Africa.

FOODSHEDS AND SELF-SUFFICIENCY RATIOS IN INDIA AND SUB-SAHARAN AFRICA



Note: Colour shading and grey boundaries show individual foodsheds around the main city (indicated with the open circle). In grey, masked by the semi-transparent foodsheds, food production (in kcal) is plotted.

Source: Analysis based on 2010 population and food production derived from the IMAGE global crop hydrology model, with losses based on FAO estimates (de Bruin et al., 2021).

At first glance, the two regions seem to differ little in their self-sufficiency: imports constitute just 3 per cent of food consumed in India, and just 9 per cent in sub-Saharan Africa. But those six percentage points indicate a substantial difference. India is currently in theory food self-sufficient – though only by a narrow margin (de Bruin et al., 2021) – even after 40 years of

Source: de Bruin et al., 2021.

rapid growth in the urban share of national food expenditures (from 25 per cent in 1971 to 60 per cent in 2011 [Reardon et al., 2020]). By contrast, sub-Saharan Africa produces just 78 per cent of its overall food demand (excluding meat, fish and dairy). Only two regions in sub-Saharan Africa have the capacity to be fully self-sufficient: parts of West Africa and parts of southern Africa.

Strengthen food system integration to increase resilience against shocks

The devastating impact of COVID-19 on employment, nutrition and food security clearly shows that the current fragmentation of food systems makes people highly vulnerable to different types of shocks. Disruptions in food supply, and local hoarding, due to constraints in physical access and shortfalls in purchasing power are accompanied by increased uncertainty due to limited access to information and scarce foresight. The vast majority of small-scale entrepreneurs and informal self-employed people faced severe economic difficulties, essentially as a consequence of the preventive measures of mobility restrictions, lockdowns and curfews imposed by local and national authorities to reduce the spread of the virus (Béné et al., 2021).

Reinforcing the resilience capacities of food system actors in response to health, economic or climate crises can be based on strategies that simultaneously enhance risk-coping and reduce dependency: providing (temporary) social safety nets, diversifying local and regional food markets, reinforcing insurance mechanisms and building the capacity of midstream agents in the food supply chain.

What policies are most effective in shifting demand-side incentives to support healthier diets?

Enabling healthier diets that are safe and affordable generally requires shifts in diet composition and consumer demand. Consumer choices depend on availability and affordability, but are also influenced by appeal and convenience. Underused or ancient indigenous crop species can also contribute to the mix of food sources (Padulosi, Thompson and Rudebjer, 2013). Strategies for steering consumption towards healthier diets rely on communication and behaviour change and on economic, social and fiscal incentives.

Market conditions that favour healthier food choices can trigger changes in shopping, preparing and eating habits. Poor people thus need incentives, along with access to markets and information. Food taxes and subsidies can further steer consumer behaviour towards more nutritious food options (Thow, Downs and Jan, 2014). But today's subsidies on staples contribute to unbalanced diets by keeping staples cheaper than healthier products (Micha et al., 2020).

Financial and fiscal incentives can stimulate local rural development and sourcing from nearby hinterland producers. Incentives can also promote consumption in specific categories: indigenous foods, underutilized foods, and so on. Supporting dietary change sometimes involves imposing penalties and barriers on the consumption of less healthy foods and on obesogenic eating practices.

The most important specific and concrete incentives for changing food systems to support shifts towards healthier diets are:

- Strengthening social safety nets programmes and cash transfers (conditional or unconditional) for poor people to spend on diversifying food intake.
- Supporting women's empowerment and gender equality with targeted measures.
- Encouraging food preparation practices that improve nutrition.
- Improving nutrition through behavioural change communication.
- Using food quality labelling and marketing to inform consumer food choices.
- Promoting ICT-based market information systems and product imaging.

Social safety nets and cash transfers

Social safety nets are increasingly used to generate new and more productive employment and to safeguard food security. They are especially effective in reaching women, wage labourers and migrants and in creating purchasing power to support food demand. An estimated 36 per cent of poor people in low- and middle-income countries could escape extreme poverty in social safety nets – which include cash, in-kind transfers, social pensions, public works and school feeding programmes targeted to poor and vulnerable households (World Bank, 2018). Widely expanded as a response to the COVID-19 pandemic, these programmes had reduced the poverty gap by about 45 per cent in the last decade (World Bank, 2018).

Social transfers include vouchers for education programmes and health care programmes that provide preferential access to fruits, vegetables or dairy products. Such food voucher programmes offer an important nutritional safety net and potentially improve nutrition for pregnant women and young schoolchildren living on low incomes, and influence future food choices. Voucher values could, however, be affected by rising food costs, a lack of access to registered retailers and registration barriers (McFadden et al., 2014).

Women's empowerment – to earn income, control time and make strategic life choices

Interventions for women's empowerment can support desirable food system outcomes. But, to improve health and nutrition outcomes, interventions must be carefully designed to avert trade-offs among various dimensions of empowerment. In particular, attention must be paid to women's control over household resources and over their time use.

Because food decisions are made largely by women, empowering women with resources and agency will generally improve diets and nutrition. Sound evidence supports this positive association, showing that empowerment leads to improvements in:

- Maternal nutrition (and health outcomes, such as reduced anaemia).
- Child diets.
- Infant and young child feeding practices.
- Child anthropometric indicators.

Several studies using cross-sectional data find positive associations between women's empowerment and child nutritional status (Hindin, 2000; Shroff et al., 2009; Shroff et al., 2011).⁴ Enhancing gender equity in food systems can thus support desirable health and nutrition outcomes by empowering women in food production, food purchasing and household consumption. More generally, widening women's opportunities to engage in the commercial food system may increase their ability to make strategic life choices. When women can engage more directly or more extensively in food system activities – either through formal employment or through increased participation in high-value products and value-adding activities – they can contribute more to household income and resources (Handsouch and Wollni, 2013; Said-Allsopp and Tallontire, 2015; Quisumbing et al., 2015). Often, such opportunities are correlated with greater control over income and related bargaining power within household relationships (Rubin, Manfre and Barret, 2009; Getahun and Willanger, 2018). Training and extension services are generally positively associated with women's empowerment, and the effect of education is also generally positive, though its strength varies by country (Quisumbing et al., 2021).

Enhancing gender equity in food systems can support desirable health and nutrition outcomes by empowering women in food production, food purchasing and household consumption.

Caution is needed, however, when designing policies to increase gender equality in labour markets linked to food systems. Women's increased involvement in food systems, by itself, does not automatically improve diets and nutrition outcomes for women or other household members (Quisumbing et al., 2021). And, while this increase can boost economic efficiency, it can also reduce women's control over assets if men take over the production and marketing of higher-value products. In this situation, women's lack of control over their earned income may disincentivize their engagement (Ashby et al., 2019; Djurfeldt, Dzanku and Isinika, 2018; Forsythe, Posthumus and Martin, 2016).

For gender-sensitive food system interventions to improve health and nutrition outcomes, it is not enough to focus solely on women's control of financial resources: their control over their time also needs to be considered. Diet, health and nutrition outcomes can reflect shifts in how women use their time, as more people migrate to urban areas and as women work more outside the home. These shifts have implications not just for childcare, but also for children's diets and nutritional status, as families rely more on the market for food (and less on their own production). So interventions need to pay close attention to women's control over their time use (Malapit et al., 2020).

⁴ In addition, women's greater control of resources is associated with children's improved human capital outcomes – a link widely confirmed by both observational studies (Quisumbing, 2003) and experimental studies (Yoong, Rabinovich and Diepeveen, 2012).

Encouraging food preparation practices that improve nutrition

Incentives for improving food preparation – the proper use of food for diets that provide sufficient energy and essential nutrients – focus on practices for cooking and distributing food within the household (portion size, eating sequence, and so on). Homestead food production may support nutritious food intake for household consumption (Ruel, Quisumbing and Balagamwala, 2018). Adjustments in portion size and serving frequency can increase the fraction of children eating fruits or vegetables and can reduce waste.

Efforts to improve food utilization habits through training and extension programmes have fairly limited effect. More promising are innovative approaches through recipe exchanges and social media that promote chefs' practices (Lamstein et al., 2014). These innovative approaches can reach larger audiences, as with the Recipes for Change initiative promoted by IFAD during the last five years (**BOX 1.5**).

One way to modify food choices is to reduce women's time constraints by increasing the convenience of healthy food preparation. In Ghana, mothers provided more complementary foods for their children when their time for preparation and cooking was reduced (Pelto and Armar-Klemesu, 2011; Jackson and Viehoff, 2016). Higher fruit and vegetable consumption is associated with fewer hours per day spent in preparing, cooking and cleaning up (Monsivais et al., 2014). In rural areas, easier access to fuelwood and water increases the time available for food preparation among lower-income groups. In Malawi, women who spent 6-10 hours each week gathering fuelwood cooked cereals and beans less often (Brouwer et al., 1996). In urban areas in India, families that own a pressure cooker were better protected against severe food insecurity (van Elsland et al., 2012).

BOX 1.5 IFAD'S RECIPES FOR CHANGE

Chefs have been visiting IFAD projects on the ground to raise awareness of how IFAD is working with farmers to build a resilient future. Partnering with celebrity chefs from around the world and rural communities in developing countries in Africa, Asia and Latin America, IFAD shows how positive change can be brought into the recipes of up to 8 million people. But it is not just about the food on people's plates; Recipes for Change looks at the threats communities face – from climate change,

Source: <https://www.ifad.org/ar/web/latest/recipes-for-change>.

daily life and difficulties, and more recently the COVID-19 pandemic – that affect some of the essential ingredients used in their main meal of the day. It shows how IFAD is working with farmers to adapt to the very real impacts of climate change in their communities, and it highlights the links between gender, youth, nutrition and the climate- and environment-sensitive investments supported by IFAD.

Using product labelling and marketing to inform consumers about nutrition

Product labelling and nutrition information can educate consumers about a food product's nutritional value, production (such as fair trade and decent living standards) and environmental footprint. Although most labels are voluntary, uniform public standards are increasingly appreciated to guarantee a level playing field for the food industry. Voluntary eco-friendly and fair trade labels lead to market segmentation and influence consumer demand only slightly.

Some evidence exists for the effect of social marketing campaigns on healthy eating behaviour (Abril and Dempsey, 2019). The length of campaigns (longer than six months) is considered a critical success factor. Private-sector food companies are also investing in healthy choice campaigns, not only in high-income countries (for example Unilever's Cheat on Meat campaign in the UK, Eat more Veg campaign in the Netherlands) but also in low- and middle-income countries (Green Food Steps in Nigeria, Nutrimenu in Indonesia).

The long-term impact of labelling on healthy food choices remains undetermined, and its effectiveness requires complementary investment in consumer education. A review of nutrition labelling studies in the Global South indicates that consumers like to have nutrition labelling on pre-packaged foods, but their use and comprehension is low (Mandle et al., 2015). Government-endorsed nutrition information is appreciated if it is clear, easily visible and standardized and includes symbols or pictures. In South Africa, food prices remain a more significant consideration than quality and nutritional value among poorer consumers when selecting food products (Koen et al., 2018).

Promoting ICT-based market information systems and product imaging

Information and communication technologies offer important new prospects for steering consumer behaviour towards healthier and sustainable diets. Improved connectivity, access to information and peer-to-peer sharing provided by ICTs such as mobile phones, radio and the internet influence consumer behaviour (GSMA, 2018, 2019). They could also improve food market transparency and stabilize food prices. Digital solutions that rely on e-commerce and consumer-to-consumer exchange contribute to better product tracing and an improved bargaining position of consumers.

Online interventions might change dietary behaviour using techniques such as goal-setting, self-monitoring, and providing instructions and feedback (Young et al., 2019). App-based interventions to improve diet, physical activity and sedentary behaviour are more effective using an integrated multi-

component approach (Bray et al., 2016; Shoeppe et al., 2016). There is still an important coverage gap (people living in areas with no mobile broadband) and usage gap (people not using mobile services) in connectivity in the Global South, which is highest in sub-Saharan Africa, where 31 per cent of the population experience a coverage gap and 45 per cent a usage gap (GSMA, 2019).

Evidence is still modest for the impact of m-Nutrition services on behaviour change, as a result of the lack of sustainable business models and the ineffectiveness of push messages (Barnett et al., 2016). A review of 15 m-Health studies in Asia and Latin America showed that 50 per cent of the interventions were effective in increasing physical activity, and 70 per cent of the identified interventions influenced diet quality (Müller et al., 2016). But m-Nutrition services in Ghana and Tanzania did not always reach poor households or women and had a limited effect on nutrition behaviour at scale.

What public investments are needed to promote healthier diets and a more inclusive food environment?

The food environment largely determines the solution space and opportunities for improving food access, availability, affordability and quality. Nutrition improvements require a food environment that enables rural and urban consumers to adopt healthy diets – and these diets should also be sustainable. To create such an enabling food environment requires public investments and laws that can steer social norms and cultural practices for various categories of consumers.

Food system performance will improve only if food supply systems are tailored towards shifting patterns of consumer demand, supported by an inclusive, reliable and trusted food environment. To achieve the nutrition transformation outlined in this chapter, policymakers must focus on contextual factors that influence the conditions for balanced and diverse food demand, and support nudging towards healthier and more sustainable dietary choices. Supply-side and demand-side initiatives can jointly support desirable food system transformation, as in the example provided in **BOX 1.6**.

The most important and concrete changes for supporting an enabling food environment – combining coercion with seduction – include:

- Legislation and capacity-building.
- Tariffs, taxes and subsidies.
- Food-based dietary guidelines.
- Co-investment for food fortification.
- Governments' institutional procurement.
- Behavioural change communication and nudging.

BOX 1.6 PROMOTING AGRICULTURAL COMMERCIALIZATION AND ENTERPRISES IN BANGLADESH

The Promoting Agricultural Commercialization and Enterprises Project aims to enhance the livelihoods of the poorest in rural Bangladesh through financial services, value chain development, and technology and product adaptation. It works to improve businesses for microentrepreneurs and small-scale farmers through self-employment opportunities. By adjusting value chain operations and empowering small-scale producers, it aims to create a more equitable and sustainable food environment – and to benefit women (64 per cent of beneficiaries are female).

Production of previously non-existent crops, such as mung beans, skyrocketed because of private

Source: IFAD project completion reports and impact assessments.

investment and subsidies. Some 400 farmers increased their agricultural income by 25 per cent from increased production and reduced fertilizer expenses. Although nutrition was not a primary focus at the start, the project adopted several nutrition-focused activities. The adjustments to the food environment through technology and investment resulted in better food safety and nutrition. The increased production of nutritious products such as fruits, vegetables, meat, eggs and dairy improved dietary diversity for some of the poorest rural communities. Nutrition education enhanced awareness and consumption of healthy and balanced diets.

Legislation and capacity-building

In the informal settings where most poor people buy their fresh and perishable food, rules for the quality and safety of food are absent, a situation compounded by poor governance and corruption. Legal measures that define minimum safety standards and limit chemical residues and added components in food are difficult to enforce. There is little trust in government certification, as much of the food sold does not meet official standards, and food certified as safe is not always safe. Most legislation and investment in food quality and safety focuses on access to export markets, with little done to support local consumers.

Compliance with Codex standards and guidance recognizes that achieving food safety requires well-planned, risk-based farm-to-table efforts that link private-sector responsibility with government oversight. Support for rules and capacity-building combined with public infrastructure investments and greater emphasis on harnessing consumer awareness can drive progress.

Tariffs, taxes and subsidies. Tariffs, tax regimes and subsidies that focus on modifying (relative) prices of nutrient-rich foods, staples and UPF are used to influence consumer choice and could generate public revenues for improving the food environment. Governments can intervene in markets in ways that lower the prices of healthier foods relative to those that are consumed sufficiently or to excess. It is also possible to directly subsidize the production or marketing of more nutrient-dense crops.

Conversely, prices of overconsumed unhealthy foods can be increased by a sugar or fat tax. The sugar taxes in Mexico and food warning labelling in Chile reduced consumption of sugary beverages as well as UPF. Interestingly, some

of this is due to consumer behaviour change, while some is caused by reactive product reformulation by food companies.

Food-based dietary guidelines. Global and national food-based dietary guidelines are underused as tools for informing investment strategies, both in agricultural development (such as research focused on fruits and vegetables, rural-ready cold chains) and in safety nets tailored to facilitate access to diets that meet dietary criteria (such as distribution of seeds or other supplies for homestead food production). Although there is some evidence of consumer understanding and adoption of such guidelines (Brown et al., 2011; Keller and Lang, 2008; Nguyen et al., 2015), little is still known on the impact of using them in public policies or investment programmes towards healthy diets.

Co-investment. Global international investments to support food fortification and biofortification breeding programmes (mainly in staples) through conventional plant breeding or modern biotechnology are used to address micronutrient deficiencies and reduce hidden hunger. Almost 370 biofortified varieties of 11 staple crops have been released in 41 countries, delivering biofortified seeds to 40+ million people. Because the efficacy and effectiveness of biofortified crops for improving micronutrient status and health outcomes has been widely proven, cost-effective biofortification investments and delivery models through partnerships with multilateral programmes and private investors can support further upscaling.

Governments' institutional procurement. Governments can use their own institutional procurement for supporting dietary change, such as healthier school meals, office canteens and food procurement for hospitals and prisons. Such public procurement programmes have proven effective in responding to immediate needs and providing opportunities for linking local and regional food economies towards more sustainable consumption patterns. Specific bidding procedures can be developed to enable sourcing from smallholder producers. In 2019, 17.3 million schoolchildren received nutritious meals and snacks from the World Food Programme in 59 countries. Spillovers of institutional meals to home consumption remain challenging.

Behavioural change communication and nudging. Because food choices are heavily determined by custom and tradition, targeted programmes for behavioural change communication can be effective for changing nutrition practices. Such programmes aim to increase the demand for vegetables, fish or poultry products while mitigating their potential negative externalities. Most effective programmes work simultaneously on community sensitization, household decision-making and women's empowerment.

Growing evidence attests to the impact of nutrition-focused behavioural change communication in low- and middle-income countries, especially to improve infant and young child feeding practices, with a positive impact on breastfeeding practices and to a lesser extent on complementary feeding (Benedict et al., 2018; Lamstein et al., 2014; Webb Girard et al., 2020). Impact at scale is realized in Bangladesh, Ethiopia and Viet Nam using a mixture of communication channels and approaches at the individual, household and

community levels and focusing on a limited number of actionable messages (Kim et al., 2020; Menon et al., 2016).

Consumers can also be steered towards healthier diets by nudges based on social norms and cultural practices: such nudges lead healthy eating to become less about choices, more about habits. Differences exist among cognitive nudges (using information and labelling), affective nudges (based on pleasure and encouragement) and behavioural nudges (improving convenience, changing portion size).

Several nudging strategies based on convenience and social norms result in healthier food choices (Arno and Thomas, 2016). Studies in high-income countries found consistent evidence that social norms and aspirations influence food choices: information indicating choices made by others significantly increased the likelihood of participants making similar choices (Robinson et al., 2014b). In an experimental setting, a social norms statement about peers' fruit and vegetable consumption proved more effective than a health benefit statement (Robinson et al., 2014a). The diet behaviours of children, adolescents and parents can mutually influence each other (Draper et al., 2015).

Generally, the most effective behavioural change communication and nudging strategies involve information provision (social media, labelling), the use of social norms, changes in default choices and adjustments in the physical environment (Bauer and Reisch, 2019). Although nudging cannot entirely replace legislation, it can influence daily food and beverage choices.

Simulation 1 in annex 1 illustrates how imposing a healthy and sustainable flexitarian diet, against a business-as-usual baseline, supports the poorest agricultural workers while keeping more people in agriculture and increasing food prices.

Policy priorities for a shift towards healthier diets

To achieve the inclusive nutrition transition envisioned in this chapter, policymakers must provide both market-based incentives and direct public investments that steer food consumption choices towards safer, healthier and more affordable diets. Supply-side initiatives should be tailored to support business innovation. Demand-side initiatives should employ fiscal incentives while also disseminating information to encourage healthier food choices. Public investments must especially target poor people who are net buyers of food, including those who depend on social safety nets or institutional food provision programmes. Finally, policy discussions must include attention to critical trade-offs among nutrition, environment and inclusion.

Specifically, policymakers should:

Focus the food policy agenda on tailoring public investment programmes and government procurement, combined with responsible private-sector innovations and market incentives to diversify diets and make food choices healthier and more sustainable. In particular:

- Reduce critical nutrition gaps by combining food (quality and price) information systems, measures for guaranteeing stable market access and gender-targeted food schemes. Depending on the context, targeting specific groups, such as minorities and indigenous peoples, may be needed.
- Support a shift in consumer demand patterns among poor people who are net buyers of food towards a better, affordable portfolio of nutrient-rich foods.
- Steer private-sector investments towards the production and marketing of high-quality food items through varied types of local food outlets that are close to consumers, provide convenience and maintain short rural-urban linkages.

Use market-based incentives and innovation programmes to support poor people's food purchasing power and women's bargaining power – and enable them to make better-informed food choices through training, labelling, communication and digitalization.

Promote the establishment of a supportive food environment that uses legal and regulatory regimes (with grades and standards), as well as fiscal measures, to support affordable food prices in favour of nutrient-dense foods; to enhance investments in improving food safety in competitive and transparent food markets (formal and informal); and to shape social norms and practices in favour of nutrient-rich foods and diversified diets that can be sourced from local producers and processors.

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